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EXAMINER

WANG, JIN CHENG

ART UNIT

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2672

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6

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/052,068

Applicant(s)

BRUDERLIN, ARMIN WALTER

Examiner

Jin-Cheng Wang

Art Unit

2672

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 12-64 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12-64 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 4/23/2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 3.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Drawings*

The drawings are objected to because in Fig. 1a the display should be referenced by 35. The proposed drawing correction filed 4-23-2002 is approved. Corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 12 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Y. Watanabe and Y. Suenaga, "A trigonal prism-based method for hair image generation", IEEE Computer Graphics and Applications, 17(3), May 1997, p. 47-53 (hereinafter Watanabe).

3. Claim 12:

Watanabe teaches a method comprising:

Modifying at least one area of hair to provide a visual effect to the area of hair in response to an external influence (*e.g., modifying at least one triangle patch by changing one of the parameters that determine the style of the wisp to provide a visual effect of a wisp of hairs in*

Art Unit: 2672

*response to the head move in a certain direction; page 52), comprising for each area (for each triangle patch);*

*Identifying a hair of a plurality of hairs of the area as a center hair (e.g., identifying a wisp locus wherein a single hair which is duplicated hundreds of times in the neighborhood in an area patch or a triangle patch; see page 52);*

*Identifying an area size (e.g., the number of triangle patches for a human head model determines or identifies the size of triangle patches; page 51; and the hair density  $M$  for each triangle patch determines the number of hairs in a wisp which controls the hair thickness or selecting the number of triangle patches in the scalp area wherein both the scalp area size is identified and the triangle patch size is identified; page 50-51);*

*Indicating at least one area parameter (e.g., the area parameters are angle, bend, ratio control, thickness controls, length controls, fold controls, density controls, randomness controls, RGB control, wave controls for the wisp; see page 51);*

*Determining hairs of the plurality of hairs that are within the area as area hairs (e.g., the area hairs are within the triangle patch wherein a single hair is duplicated hundreds of times in the neighborhood of the single hair in the triangle patch; page 52), the area located according to the center hair (the wisp loci or the single hair within the triangle patch) and the area size (the size of the triangle patch is determined by the number of triangle patches used for a human head model), and*

*Orienting the area hairs (hairs in the triangle patch) according to at least one area parameter (e.g., hairstyles are controlled by the wisp parameters and the parameters' length, direction vector, thickness, twist angle, and number of trigonal prisms define the hair model;*

Art Unit: 2672

*page 49; and a small number of parameters can be controlled to determine the hair motions; page 52).*

Claim 14:

The claim 14 encompasses the same scope of invention as that of the claim 12 except additional claim limitation of the at least one area parameter being dynamically varied to provide animated effect. However, Watanabe further discloses the claim limitation of the at least one area parameter being dynamically varied to provide animated effect (*e.g., computer animation of hair; page 52*).

4. Claim 15 is rejected under 35 U.S.C. 102(b) as being anticipated by Van Gelder, Allen, and Jane Wilhelms, "An Interactive Fur Modeling Technique", Proceedings of Graphics Interface, May 1997 (hereinafter Gelder).

5. Claim 15:

Gelder teaches a method for generating hairs on a surface comprising:

Placing control hairs on each surface patch of surface patches on a surface (*e.g., the lengths of hairs being placed on the triangle patches are controllable and therefore the hairs are called control hairs; see page 3*);

Indicating a global density value for hairs (*e.g., Each triangle is allocated an appropriate number of hairs based on its area and the overall hair density; page 2*);

Defining local points which define an area of the surface to be processed (*e.g., each triangle is allocated an appropriate number hairs based on its area; page 2*);

Art Unit: 2672

Approximating sub-areas defined by polygons (*e.g., random rounding being used for approximating the sub-areas defined by triangles and those hairs allocated to a triangle are distributed over the surface at random according to a 2D uniform distribution; page 2-3*);

Averaging a number of hairs per square unit area across sub-areas (*e.g., allocating hairs to the triangles according to the overall density dictates the averaging process; page 2-3*).

Determining a total number of hairs per unit area (*e.g., about 100 per square inch on small monkey; page 2*); and

Placing hairs in the sub-areas (triangles) according to the total number of hairs per unit area (*e.g., the skin covering is a triangle mesh. Each triangle is allocated an appropriate number of hairs based its area and the overall hair density; page 2-3*).

6. Claims 16 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Y. Watanabe and Y. Suenaga, "A trigonal prism-based method for hair image generation", IEEE Computer Graphics and Applications, 17(3), May 1997, p. 47-53 (hereinafter Watanabe).

7. Claim 16:

Watanabe teaches a method comprising:

Modifying at least one area of hair to provide a visual effect of clumping of hairs (*e.g., the wisp simulates the large-scale coherent motion of clusters as well as small scale variations in hair motion in response to the head motion and during animation, wisp hairs are automatically adapts to itself on local wisp fusion*) in response to an external influence (*e.g., modifying at least*

Art Unit: 2672

*one triangle patch to provide a visual effect of a wisp of hairs in response to the head move in a certain direction; page 52), comprising for each area (for each triangle patch);*

*Identifying a hair of the plurality of hairs as a center area (e.g., identifying a wisp locus wherein a single hair which is duplicated hundreds of times in the neighborhood in an area patch or a triangle patch; see page 52);*

*Identifying an area size (e.g., the number of triangle patches for a human head model determines the size of triangle patches; page 51; and the hair density  $M$  for each triangle patch determines the number of hairs in a wisp which controls the hair thickness; page 50);*

*Identifying at least one clump parameter (e.g., the wisp parameters are angle, bend, ratio control, thickness controls, length controls, fold controls, density controls, randomness controls, RGB control, wave controls for the wisp; see page 51);*

*Determining hairs of the plurality of hairs that are within the area as area hairs (e.g., the area hairs are within the triangle patch wherein a single hair is duplicated hundreds of times in the neighborhood of the single hair in the triangle patch; page 52), the area located according to the center hair (the wisp loci or the single hair within the triangle patch) and the area size (the size of the triangle patch is determined by the number of triangle patches used for a human head model), and*

*Orienting the area hairs (hairs in the triangle patch) according to at least one area parameter (e.g., hairstyles are controlled by the wisp parameters and the parameters' length, direction vector, thickness, twist angle, and number of trigonal prisms define the hair model; page 49; and a small number of parameters can be controlled to determine the hair motions; page 52).*

Art Unit: 2672

Claim 17:

The claim 17 encompasses the same scope of invention as that of the claim 16 except additional claim limitation of the at least one clump parameter being dynamically varied to provide at least one animated effect. However, Watanabe further discloses the claim limitation of the at least one clump parameter being dynamically varied to provide at least one animated effect (*e.g., the wisp parameters are the clump parameters being dynamically varied in response to head motion to provide the animated effect in the computer animation of hair; page 52*).

8. Claims 19-22 are rejected under 35 U.S.C. 102(b) as being anticipated by K. Anjyo, Y. Usami, T. Kurihara, "A simple method for extracting the natural beauty of hair", Proc. of the 19th annual conf. on Computer graphics and interactive techniques, p.111-120, July 1992 (hereinafter Anjyo).

9. Claim 19:

Anjyo teaches a method comprising:

Modifying at least one area of hair of a plurality of hairs to provide a visual breaking effect (Fig. 4; and parting the hair at the middle of the head; page 114) in response to an external influence (the applied external force; page 114-115), comprising for each area (for each polygon);

Identifying a hair of the plurality of hairs as a center hair (any of the breaking line areas in Fig. 3-4 are center hairs and one of the center hairs can be identified), said center hair comprising a break line hair,



Art Unit: 2672

Identifying an area size (e.g., 10,000 polygons for the head model determines the polygon size; page 114);

Indicating at least one area parameter (e.g., orientation or bending direction or combing direction or the applied external force direction; page 114-115);

Determining hairs of the plurality of hairs that are within the area as area hairs (*the number of hairs for the head determines the density of hairs within each polygon and also determines the number of area hairs in the polygon area; page 120*), the area located according to the center hair and the area size (*the polygon located according to the breaking line and the size of polygon*), and

Orienting the area hairs according to at least area parameter (e.g., *the hair dynamics is determined according to human movement or the blowing in the wind as modeled by the hair model wherein the hair dynamics is described by the differential equations governed by such parameters as the orientation or bending direction or combing direction or the applied external force direction; page 114-116*).

Claim 20:

The claim 20 encompasses the same scope of invention as that of the claim 19 except additional claim limitation of symmetric breaking and reorienting hairs with respect to a corresponding hair. However, Anjyo further discloses the claim limitation of symmetric breaking (*Figs. 3-4 and page 114*) and reorienting hairs with respect to a corresponding hair (e.g., *collision detection to prevent the hair-to-hair collisions and therefore reorienting hairs with respect to a corresponding hair without hair-to-hair collisions; page 114*).

Art Unit: 2672

Claim 21:

The claim 21 encompasses the same scope of invention as that of the claim 19 except additional claim limitation of one-sided breaking and reorienting hairs away from a corresponding break line hair. However, Anjyo further discloses the claim limitation of one-sided breaking (*page 114*) and reorienting hairs away from a corresponding break line hair (Figs. 3-4; *e.g., collision detection to prevent the hair-to-hair collisions and therefore reorienting hairs with respect to a corresponding hair without hair-to-hair collisions; page 114*).

Claim 22:

The claim 22 encompasses the same scope of invention as that of the claim 19 except additional claim limitation of the at least one area parameter being dynamically varied to provide animated effects. However, Anjyo further discloses the claim limitation of the at least one area parameter being dynamically varied to provide animated effect (*e.g., the hair dynamics is determined according to human movement or the blowing in the wind as modeled by the hair model wherein the hair dynamics is described by the differential equations governed by such parameters as the orientation or bending direction or combing direction or the applied external force direction; page 114-116*).

10. Claims 24-27 are rejected under 35 U.S.C. 102(b) as being anticipated by K. Anjyo, Y. Usami, T. Kurihara, "A simple method for extracting the natural beauty of hair", Proc. of the 19th annual conf. on Computer graphics and interactive techniques, p.111-120, July 1992 (hereinafter Anjyo).

Art Unit: 2672

11. Claim 24:

Anjyo teaches a method comprising:

Modifying at least one area of hair to provide a visual groomed effect (*e.g., the groomed effect as a result of combing; page 114*), comprising for each area (*for each polygon of a plurality of polygons modeling the head*);

Creating at least one combing direction curve (*e.g., the applied external force is the combing direction curve for the purposes of animation; see page 115 and Figures 3-5*);

Assigning at least one control hair (*e.g., the control hair being the cantilever beam in hairstyle modeling; page 112*);

Defining at least one area parameter for the combing direction curve (*e.g., the external force  $g$  such as gravit such that the hair bending can be simulated, page 112*); and

Orienting the control hair towards the combing direction curve (*e.g., bending momentum as a result of combing; page 112-115*).

Claim 25:

The claim 25 encompasses the same scope of invention as that of the claim 24 except additional claim limitation of the at least one area parameter being selected from the group comprising bend, curvature, and fall-off. However, Anjyo further discloses the claim limitation of the the at least one area parameter being selected from the group comprising bend, curvature, and fall-off (*e.g., in page 112, bending is described, in page 115, curvature and fall-off is described*).

Claim 26:

Art Unit: 2672

The claim 26 encompasses the same scope of invention as that of the claim 24 except additional claim limitation of identifying a control hair including at least one control vertex located below an underlying surface. However, Anjyo further discloses the claim limitation of identifying a control hair including at least one control vertex located below an underlying surface (*e.g., the hair pore is being located above the underlying surface or within the background layer; see page 112*).

Claim 27:

The claim 27 encompasses the same scope of invention as that of the claim 24 except additional claim limitation of identifying a control hair including at least one control vertex located above an underlying surface. However, Anjyo further discloses the claim limitation of identifying a control hair including at least one control vertex located above an underlying surface (*e.g., the hair pore is being located above the underlying surface or within the foreground layer; see page 112*).

12. Claims 28-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Van Gelder, Allen, and Jane Wilhelms, "An Interactive Fur Modeling Technique", Proceedings of Graphics Interface, May 1997 (hereinafter Gelder).

13. Claim 28:

Gelder teaches a method comprising:

Obtaining a shading normal for at least one point on a hair (*e.g., obtaining a normal vector for each skin vertex used in shading the skin and in orienting the fur; page 3 and 5*);

Art Unit: 2672

Calculating an intensity at a point on the hair (*e.g., calculating the intensity comprising ambient, diffuse, and specular reflectivity RGB; page 3 and 4*);

Selectively shortening at least one hair based upon at least one parameter (*e.g., the hair length is user-controlled and fur can be drawn as a combination of longer overcoat or shorter undercoat hairs and the user specifies the percentage of hair that is overcoat and undercoat and the relative length of the undercoat compared to the relative length of the overcoat; page 2; the normal vectors of the three vertices of the triangle are interpolated to provide a normal vector at the individual hair root which is called the skin normal and associated with each skin vertex is a length for the fur at that vertex, and these lengths are interpolated with the barycentric coordinates to provide the lengths of individual hairs; page 3*).

Claim 29:

The claim 29 encompasses the same scope of invention as that of the claim 28 except additional claim limitation of mixing a surface normal with a normal vector at a plurality of points on the hair. However, Gelder further discloses the claim limitation of mixing a surface normal with a normal vector at a plurality of points on the hair (*e.g., the normal vectors at the three vertices of the triangle are interpolated to provide a skin normal; page 3 and 5*).

Claim 30:

The claim 30 encompasses the same scope of invention as that of the claim 39 except additional claim limitation of mixing a surface normal with a normal vector comprising calculating an angle between a tangent vector at the plurality of points on the hair and a surface normal vector at a base position of the hair and adjusting the contribution of the surface normal and the normal vector to the shading normal based on the angle. However, Gelder further

Art Unit: 2672

discloses the claim limitation calculating an angle between a tangent vector at the plurality of points on the hair and a surface normal vector at a base position of the hair and adjusting the contribution of the surface normal and the normal vector to the shading normal based on the angle (*e.g., weightless hair direction determines the hair's final orientation and shape where the plurality of points on the hair are control points; page 4*).

Claim 31:

The claim 31 encompasses the same scope of invention as that of the claim 28 except additional claim limitation of the at least one parameter being selected from the group comprising hair length and hair density. However, Gelder further discloses the claim limitation of the at least one parameter being selected from the group comprising hair length and hair density (*e.g., hair length and hair density are described in page 2-3*).

14. Claims 32-36 are rejected under 35 U.S.C. 102(b) as being anticipated by K. Anjyo, Y. Usami, T. Kurihara, "A simple method for extracting the natural beauty of hair", Proc. of the 19th annual conf. on Computer graphics and interactive techniques, p.111-120, July 1992 (hereinafter Anjyo).

15. Claim 32:

Anjyo teaches a method comprising:

Constructing a seam between at least two adjacent surface patches (*e.g., a seam is constructed by combing or parting the hair at the middle of the head to form two adjacent surface patches; see Figs. 3-4 and page 114*);

Art Unit: 2672

Identifying a boundary hair of a first surface patch (*e.g., the right-half of the head*) along the seam (*e.g., the parting or breaking step has identified a boundary hair in the middle of the head to form two adjacent surface area; Figs. 3-4 and page 114*); and

Checking a second surface patch (*e.g., the left-half of the head*) for a corresponding boundary hair (*e.g., the parting or breaking step has also checked a boundary hair in the middle of head for the left-half of the head, Figs. 3-4 and page 114*).

- Examiner Notes:
- The claim limitation set forth “a seam” which is not necessarily a geometric discontinuity across one polygonal patch edge from another polygonal patch edge because Applicant failed to define a seam as such a geometric discontinuity. A seam could be the hair distribution discontinuity across one surface patch from another surface patch.

Claim 33:

The claim 33 encompasses the same scope of invention as that of the claim 32 except additional claim limitation of aligning the boundary hair of the first surface patch with the corresponding boundary hair of the second surface patch (*e.g., the boundary hair on the right-half of the head area are aligned with the corresponding hair on the left-half of the head area; see Figs. 3-4 and page 114*).

Claim 34:

The claim 34 encompasses the same scope of invention as that of the claim 33 except additional claim limitation of modifying a location of the boundary hair of the first surface patch

Art Unit: 2672

and a location of the corresponding boundary hair of the second surface patch to a common location. However, Anjyo further discloses the claim limitation of modifying a location of the boundary hair of the first surface patch and a location of the corresponding boundary hair of the second surface patch to a common location (*e.g., combing brings or snaps the corresponding hair of the left-half to the right-half head area wherein the blending is required to determine the color of one pixel because several boundary hairs contributes to the color of that one pixel by the action of combing or animation; Figs. 3-4 and page 114*).

## Claim 35:

The claim 35 encompasses the same scope of invention as that of the claim 33 except additional claim limitation of snapping the corresponding hair of the second surface patch to a location of the boundary hair of the first surface patch. However, Anjyo further discloses the claim limitation of snapping the corresponding hair of the second surface patch to a location of the boundary hair of the first surface patch (*e.g., combing brings or snaps the corresponding hair of the left-half to the right-half head area; Figs. 3-4 and page 114*).

## Claim 36:

The claim 36 encompasses the same scope of invention as that of the claim 32 except additional claim limitation of determining the absence of a corresponding boundary hair of the second surface patch and inserting a corresponding boundary hair of the second surface patch.

However, Anjyo further discloses the claim limitation of determining the absence of a corresponding boundary hair of the second surface patch and inserting a corresponding boundary hair of the second surface patch (*e.g., combing brings or snaps the corresponding hair of the left-half to the right-half head area wherein the blending is not required to determine the color of a*



Art Unit: 2672

*pixel because only one boundary hair contributes to the color of that one pixel by the action of combing or animation; Figs. 3-4 and page 114).*

16. Claims 37 and 38 are rejected under 35 U.S.C. 102(b) as being anticipated by Y. Watanabe and Y. Suenaga, "A trigonal prism-based method for hair image generation", IEEE Computer Graphics and Applications, 17(3), May 1997, p. 47-53 (hereinafter Watanabe).

Claim 37:

The claim 37 encompasses the same scope of invention as that of the claim 12. The claim 37 is subject to the same rationale of rejection set forth in the claim 12.

Claim 38:

The claim 38 encompasses the same scope of invention as that of the claim 14. The claim 38 is subject to the same rationale of rejection set forth in the claim 14.

17. Claim 40 is rejected under 35 U.S.C. 102(b) as being anticipated by Van Gelder, Allen, and Jane Wilhelms, "An Interactive Fur Modeling Technique", Proceedings of Graphics Interface, May 1997 (hereinafter Gelder).

Claim 40:

The claim 40 encompasses the same scope of invention as that of the claim 15. The claim 40 is subject to the same rationale of rejection set forth in the claim 15.

Art Unit: 2672

18. Claim 41 is rejected under 35 U.S.C. 102(b) as being anticipated by Y. Watanabe and Y. Suenaga, "A trigonal prism-based method for hair image generation", IEEE Computer Graphics and Applications, 17(3), May 1997, p. 47-53 (hereinafter Watanabe).

Claim 41:

The claim 41 encompasses the same scope of invention as that of the claim 16. The claim 41 is subject to the same rationale of rejection set forth in the claim 16.

19. Claims 42-45 are rejected under 35 U.S.C. 102(b) as being anticipated by K. Anjyo, Y. Usami, T. Kurihara, "A simple method for extracting the natural beauty of hair", Proc. of the 19th annual conf. on Computer graphics and interactive techniques, p.111-120, July 1992 (hereinafter Anjyo).

Claim 42:

The claim 42 encompasses the same scope of invention as that of the claim 19. The claim 42 is subject to the same rationale of rejection set forth in the claim 19.

Claim 43:

The claim 43 encompasses the same scope of invention as that of the claim 20. The claim 43 is subject to the same rationale of rejection set forth in the claim 20.

Claim 44:

The claim 44 encompasses the same scope of invention as that of the claim 21. The claim 44 is subject to the same rationale of rejection set forth in the claim 21.

Claim 45:

Art Unit: 2672

The claim 45 encompasses the same scope of invention as that of the claim 42 except additional claim limitation of the at least one area parameter being selected from the group comprising break-percent, break-rate, and break vector. However, Anjyo further discloses the claim limitation of the at least one area parameter being selected from the group comprising break-percent, break-rate, and break vector (*e.g., the combing direction is the break vector or the shearin/cutting/perming direction and the applied external force constitute the breaking vectors and the percentage of breaking can be ascertained in Figs. 3-4 and page 114*).

20. Claims 46-49 are rejected under 35 U.S.C. 102(b) as being anticipated by K. Anjyo, Y. Usami, T. Kurihara, "A simple method for extracting the natural beauty of hair", Proc. of the 19th annual conf. on Computer graphics and interactive techniques, p.111-120, July 1992 (hereinafter Anjyo).

Claim 46:

The claim 46 encompasses the same scope of invention as that of the claim 24. The claim 46 is subject to the same rationale of rejection set forth in the claim 24.

Claim 47:

The claim 47 encompasses the same scope of invention as that of the claim 25. The claim 47 is subject to the same rationale of rejection set forth in the claim 25.

Claim 48:

The claim 48 encompasses the same scope of invention as that of the claim 26. The claim 48 is subject to the same rationale of rejection set forth in the claim 26.

Claim 49:

Art Unit: 2672

The claim 49 encompasses the same scope of invention as that of the claim 27. The claim 49 is subject to the same rationale of rejection set forth in the claim 27.

21. Claims 50-52 are rejected under 35 U.S.C. 102(b) as being anticipated by Van Gelder, Allen, and Jane Wilhelms, "An Interactive Fur Modeling Technique", Proceedings of Graphics Interface, May 1997 (hereinafter Gelder).

Claim 50:

The claim 50 encompasses the same scope of invention as that of the claim 28. The claim 50 is subject to the same rationale of rejection set forth in the claim 28.

Claim 51:

The claim 51 encompasses the same scope of invention as that of the claim 29. The claim 51 is subject to the same rationale of rejection set forth in the claim 29.

Claim 52:

The claim 52 encompasses the same scope of invention as that of the claim 30. The claim 52 is subject to the same rationale of rejection set forth in the claim 30.

22. Claims 53-55 are rejected under 35 U.S.C. 102(b) as being anticipated by K. Anjyo, Y. Usami, T. Kurihara, "A simple method for extracting the natural beauty of hair", Proc. of the 19th annual conf. on Computer graphics and interactive techniques, p.111-120, July 1992 (hereinafter Anjyo).

Claim 53:

Art Unit: 2672

The claim 53 encompasses the same scope of invention as that of the claim 32. The claim 53 is subject to the same rationale of rejection set forth in the claim 32.

Claim 54:

The claim 54 encompasses the same scope of invention as that of the claim 33. The claim 54 is subject to the same rationale of rejection set forth in the claim 33.

Claim 55:

The claim 55 encompasses the same scope of invention as that of the claim 36. The claim 55 is subject to the same rationale of rejection set forth in the claim 36.

23. Claims 56-61 are rejected under 35 U.S.C. 102(b) as being anticipated by K. Anjyo, Y. Usami, T. Kurihara, "A simple method for extracting the natural beauty of hair", Proc. of the 19th annual conf. on Computer graphics and interactive techniques, p.111-120, July 1992 (hereinafter Anjyo).

24. Claim 56:

(a) Anjyo teaches a system for generating hairs comprising:

A surface definition module (page 120) configured to define at least one surface of an object (e.g., human head);

An interpolation module configured to interpolate (page 119) and generate a plurality of hairs across at least one surface (e.g., Figs. 3-4 and page 114); and

Art Unit: 2672

A hair clumping and breaking module (page 114) configured to identify a hair of the plurality of hairs as a center hair (e.g., hairs in the break line are identified as center hairs; Figs. 3-4 and page 114),

Identify an area size (e.g., 10,000 polygons for the head model determines the polygon size; page 114);

Indicate at least one area parameter (e.g., orientation or bending direction or combing direction or the applied external force direction; page 114-115);

Determine hairs of the plurality of hairs that are within the area as area hairs (*the number of hairs for the head determines the density of hairs within each polygon and also determines the number of area hairs in the polygon area; page 120*), the area located according to the center hair and the area size (*the polygon located according to the breaking line and the size of polygon*), and

Orient the area hairs according to at least area parameter (*e.g., the hair dynamics is determined according to human movement or the blowing in the wind as modeled by the hair model wherein the hair dynamics is described by the differential equations governed by such parameters as the orientation or bending direction or combing direction or the applied external force direction; page 114-116*).

Claim 57:

The claim 57 encompasses the same scope of invention as that of the claim 56 except additional claim limitation of combing and seamless hairs across surface boundaries. However,

Art Unit: 2672

Anjyo further discloses the claim limitation of combing (page 114) and seamless hairs across surface boundaries (Figs. 3-4).

Claim 58:

The claim 58 encompasses the same scope of invention as that of the claim 56 except additional claim limitation of providing shading, back-lighting and shadowing effects to the hairs. However, Anjyo further discloses the claim limitation of providing shading (e.g., shading normal is considered), back-lighting (glossy hair) and shadowing effects to the hairs (e.g., rendering and animating hair produces glossy hair or shadowing effect; see page 118-119).

Claim 59:

The claim 59 encompasses the same scope of invention as that of the claim 56 except additional claim limitation of clumping of hairs and breaking of hairs.

However, Anjyo further discloses the claim limitation of clumping of hairs (e.g., tying hairs up in a ponytail or hair strands in a wisp) and breaking of hairs (e.g., parting the hair at the middle of the head; Figs. 3-4 and page 114).

Claim 60:

The claim 60 encompasses the same scope of invention as that of the claim 56 except additional claim limitation of the at least one area parameter being selected from the group comprising clump-percent, clump-rate, break-percent, break-rate, and break vector. However, Anjyo further discloses the claim limitation of the at least one area parameter being selected from the group comprising clump percent, clump rate, break-percent, break-rate, and break vector (*e.g., the combing direction is the break vector or the shearin/cutting/perming direction and the applied external force constitute the breaking vectors and the percentage of breaking as*

Art Unit: 2672

*well as the percentage of clumping, e.g., the ponytails occupies certain percentage of the human head, can be ascertained in Figs. 3-4 and page 114).*

Claim 61:

The claim 61 encompasses the same scope of invention as that of the claim 56 except additional claim limitation of the center hair comprising a break line hair that lies approximately on a fur track. However, Anjyo further discloses the claim limitation of the center hair comprising a break line hair that lies approximately on a fur track (e.g., Fig. 12).

25. Claims 62-64 are rejected under 35 U.S.C. 102(b) as being anticipated by K. Anjyo, Y. Usami, T. Kurihara, "A simple method for extracting the natural beauty of hair", Proc. of the 19th annual conf. on Computer graphics and interactive techniques, p.111-120, July 1992 (hereinafter Anjyo).

26. Claim 62:

A system comprising:

A memory configured to share data representative of a plurality of hairs (page 120); and

A processor coupled to the memory and configured (page 120) to

modify at least one area of hair to provide a visual effect in response to an external influence (*Fig. 4; and parting the hair at the middle of the head; page 114; and the hair is gently blowing in the wind or is swaying according to human movement; page 115; or the applied external force; page 114-115*), comprising for each area (for each polygon);



Art Unit: 2672

Identifying an area size (e.g., 10,000 polygons for the head model determines the polygon size; page 114);

Indicating at least one area parameter (e.g., orientation or bending direction or combing direction or the applied external force direction; page 114-115);

Determining hairs of the plurality of hairs that are within the area as area hairs (*the number of hairs for the head determines the density of hairs within each polygon and also determines the number of area hairs in the polygon area; page 120*), the area located according to the center hair and the area size (*the polygon located according to the breaking line and the size of polygon*), and

Orienting the area hairs according to at least area parameter (*e.g., the hair dynamics is determined according to human movement or the blowing in the wind as modeled by the hair model wherein the hair dynamics is described by the differential equations governed by such parameters as the orientation or bending direction or combing direction or the applied external force direction; page 114-116*).

Claim 63:

The claim 63 encompasses the same scope of invention as that of the claim 62 except additional claim limitation of a display configured to display an object comprising modified areas of hairs. However, Anjyo further discloses the claim limitation of a display configured to display an object comprising modified areas of hairs (Figs. 3-4 and page 120).

Claim 64:

Art Unit: 2672

The claim 64 encompasses the same scope of invention as that of the claim 62 except additional claim limitation of clumping of hairs and breaking of hairs.

However, Anjyo further discloses the claim limitation of clumping of hairs (e.g., tying hairs up in a ponytail) and breaking of hairs (e.g., parting the hair at the middle of the head; Figs. 3-4 and page 114).

***Claim Rejections - 35 USC § 103***

27. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

28. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Y. Watanabe and Y. Suenaga, "A trigonal prism-based method for hair image generation", IEEE Computer Graphics and Applications, 17(3), May 1997, p. 47-53 (hereinafter Watanabe) as applied to claim 12 above, and further in view of K. Anjyo, Y. Usami, T. Kurihara, "A simple method for extracting the natural beauty of hair", Proc. of the 19th annual conf. on Computer graphics and interactive techniques, p. 111-120, July 1992 (hereinafter Anjyo).

29. Claim 13:

(a) The claim 13 encompasses the same scope of invention as that of the claim 12 except additional claim limitation of clumping of hairs and breaking of hairs.

Art Unit: 2672

(b) Watanabe teaches the claim 12. However, Watanabe is silent to clumping of hairs and breaking of hairs.

(c) Anjyo teaches clumping of hairs (e.g., tying hairs up in a ponytail) and breaking of hairs (e.g., parting the hair at the middle of the head; Figs. 3-4 and page 114).

(d) It would have been obvious to one of ordinary skill in the art to have incorporated clumping of hairs and breaking of hairs into Watanabe's method because Anjyo also teaches other limitation set forth in the claim 13 such as orienting the area hairs according to at least one area parameter.

(e) One of the ordinary skill in the art would be motivated to do this because incorporating clumping and breaking of hairs achieve visual effects such as different hairstyles can be realized to beatify the hairs (Anjyo page 114).

30. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Y. Watanabe and Y. Suenaga, "A trigonal prism-based method for hair image generation", IEEE Computer Graphics and Applications, 17(3), May 1997, p. 47-53 (hereinafter Watanabe) as applied to claim 16 above, and further in view of Anderson et al. U.S. Patent No. 6,559,849 (hereinafter Anderson).

31. Claim 18:

(a) The claim 18 encompasses the same scope of invention as that of the claim 16 except additional claim limitation of simulating water hitting hairs and making the hairs increasing wet.

(b) Watanabe teaches the claim 16. However, Watanabe is silent to simulating water hitting hairs and making the hairs increasing wet.

(c) Anderson teaches hair animation and simulating the motion of hairs and the compositing or blending taking into consideration of the opacity information so that a layer of water can be blended with a patch of hair and by changing the opacity information in the compositing process the animating effect of simulating water hitting hairs and making the hairs increasing wet can be achieved (e.g., Anderson column 5-10).

(d) It would have been obvious to one of ordinary skill in the art to have incorporated simulating water hitting hairs and making the hairs increasing wet into Watanabe's method because Anderson also teaches other limitation set forth in the claim 18 such as hair animation (Anderson column 8).

(e) One of the ordinary skill in the art would be motivated to do this because incorporating the hair animation by adding a layer of texture such as water into the hair simulates the water hitting effect (Anderson column 5-10).

32. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over K. Anjyo, Y. Usami, T. Kurihara, "A simple method for extracting the natural beauty of hair", Proc. of the 19th annual conf. on Computer graphics and interactive techniques, p.111-120, July 1992 (hereinafter Anjyo) as applied to claim 22 above, and further in view of Anderson et al. U.S. Patent No. 6,559,849 (hereinafter Anderson).

33. Claim 23:

Art Unit: 2672

(a) The claim 23 encompasses the same scope of invention as that of the claim 22 except additional claim limitation of simulating water hitting hairs and making the hairs increasing wet.

(b) Anjyo teaches the claim 22. However, Anjyo is silent to simulating water hitting hairs and making the hairs increasing wet.

(c) Anderson teaches hair animation and simulating the motion of hairs and the compositing or blending taking into consideration of the opacity information so that a layer of water can be blended with a patch of hair and by changing the opacity information in the compositing process the animating effect of simulating water hitting hairs and making the hairs increasing wet can be achieved (e.g., Anderson column 5-10).

(d) It would have been obvious to one of ordinary skill in the art to have incorporated simulating water hitting hairs and making the hairs increasing wet into Anjyo's method because Anderson also teaches other limitation set forth in the claim 23 such as hair animation (Anderson column 8).

(e) One of the ordinary skill in the art would be motivated to do this because incorporating the hair animation by adding a layer of texture such as water into the hair simulates the water hitting effect (Anderson column 5-10).

34. Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Y. Watanabe and Y. Suenaga, "A trigonal prism-based method for hair image generation", IEEE Computer Graphics and Applications, 17(3), May 1997, p. 47-53 (hereinafter Watanabe) as applied to claim 16 above, and further in view of Anderson et al. U.S. Patent No. 6,559,849 (hereinafter Anderson).

35. Claim 39:

(a) The claim 39 encompasses the same scope of invention as that of the claim 38 except additional claim limitation of simulating water hitting hairs and making the hairs increasing wet.

(b) Watanabe teaches the claim 38. However, Watanabe is silent to simulating water hitting hairs and making the hairs increasing wet.

(c) Anderson teaches hair animation and simulating the motion of hairs and the compositing or blending taking into consideration of the opacity information so that a layer of water can be blended with a patch of hair and by changing the opacity information in the compositing process the animating effect of simulating water hitting hairs and making the hairs increasing wet can be achieved (e.g., Anderson column 5-10).

(d) It would have been obvious to one of ordinary skill in the art to have incorporated simulating water hitting hairs and making the hairs increasing wet into Watanabe's method because Anderson also teaches other limitation set forth in the claim 18 such as hair animation (Anderson column 8).

(e) One of the ordinary skill in the art would be motivated to do this because incorporating the hair animation by adding a layer of texture such as water into the hair simulates the water hitting effect (Anderson column 5-10).

***Conclusion***

Art Unit: 2672

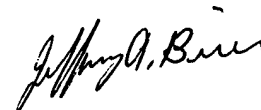
36. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jin-Cheng Wang whose telephone number is (703) 605-1213.

The examiner can normally be reached on 8:00 - 6:30 (Mon-Thu).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Razavi can be reached on (703) 305-4713. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jcw

  
JEFFERY BRIER  
PRIMARY EXAMINER